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Cidaris florigemma, and the lower Kimmeridge or Astartian are described.

Cretaceous.—A neuropterous insect (*Æschna flindersiensis*), two trilobites and five molluscan species, including an *Avicula* and a *Modiola*, have been described by Dr. H. Woodward and W. H. Hudleston from the Cretaceous of Australia (*Geol. Mag.*, August).

Pleistocene.—Our knowledge of the glaciers of Europe is further increased in a paper by Edward Richter, in the zeitschrift of the German Alpine Club, entitled, "Observations on the Glaciers of the Eastern Alps, (I) the Obersalzbacher Glacier."—The Neues Jahrbuch für Mineralogie, Geol. and Palæon., 1884, notices the work of J. Partsch upon the ancient glaciers of the Carpathians and Central Germany, and that of A. Penck upon the glaciation of the German Alps, their causes, periodical retreat, and influence over the topography of the region covered by them. Penck divides the ice-period in the neighborhood of Innsbruck into six periods, concluding with the erosion of the Valley of the Inn, the formation of ravines on the terraces, and the deposition of moraines in them.—The same issue notices an account by Sr. Pereira Cabral of the superficial deposits of the basin of the Douro, around Oporto.

MINERALOGY.¹

LEUCITE FROM LOWER CALIFORNIA.—The history of leucite is very interesting. Some thirty years ago Humboldt made the general statement that leucite occurred nowhere outside of Europe. Curiously enough, until within a few years this statement held good. In 1874, however, Vogelsang found it in an Asiatic basalt, and, in 1876, Zirkel announced its discovery in Wyoming Territory, U. S.

Although the leucite was invisible to the naked eye, Zirkel's discovery was regarded so important that the locality was named by the U. S. Geological Survey the *Leucite Hills*. An interesting commentary on the influence of modern science is furnished by a name so given.

Another extra-European locality for leucite is now announced by Von Chrustschoff² who finds it in a lava in the vicinity of the volcano "Cerro de las Virgines" in Lower California. The rock consists of an ash-gray ground-mass sprinkled with rounded spots of brownish-black obsidian or glass, and with light specks of leucite. These light specks are shown by a lens to have a rounded octagonal outline. Augite and olivine also occur porphyritically, and in the groundmass plagioclase, magnetite, nephe-

¹ Edited by Professor H. CARVILL LEWIS, Academy of Natural Sciences, Phila.

² Min. u. Petrograph. Mitth., 1884, VI, 160.

line, mica, glass, and perhaps melilite can be found by the microscope.

The leucite is remarkably clear and fresh, and shows in polarized light the well known twinning structure, even better marked than in the leucite of the Vesuvian lavas or of the Laacher-See. While generally in rounded masses, the smaller individuals are often clearly octagonal in outline. The microscope shows the leucite to contain many inclusions, among which are augite, apatite, olivine, plagioclase, magnetite, nepheline and glass inclusions and bubbles.

Leucite has as yet never been found in rocks of pre-Tertiary age.

ENARGITE FROM MONTANA.—An arseniferous copper ore from Montana has been examined by Mr. Wm. Semmons,¹ who has found in it crystals of a mineral resembling enargite. The crystals are rare and small. They show prismatic and pinacoidal planes, the macro- and brachydomes and the basal pinacoid, and are apparently orthorhombic. They are highly striated, like stibnite, and cleave into little rhombic prisms. $H = 2.5$. Spec. grav. = 3.92. Soils the fingers. Color lead-gray when freshly broken, tarnishing on exposure, and then resembling blende. Streak black. Before the blowpipe it decrepitates and exfoliates into worm-like threads like vermiculite, and gives reactions for sulphur, arsenic and copper.

Composition: mean of two analyses:

Cu	As	S	SiO ₂	Fe	
45.78	18.65	31.30	2.50	.80	= 99.03

As the hardness, the cleavage and the blowpipe characters differ from typical enargite, although the composition is the same, it is possible that this is a distinct species falling among such other sulph-arsenites of copper as famatinite, clarite, luzonite and guayacanite. It is desirable that crystallographic measurements should be taken.

LAZULITE FROM GEORGIA.—The beautiful lazulite occurring at Graves mountain, Lincoln county, Georgia, has long been known, but has until now not been investigated optically. It is in fine sky-blue crystals often over an inch in length and in width. Von Lasaulx² of Bonn has recently examined it optically. Fine pleochroism was noticed, the crystal being colorless in one direction of elasticity, and sky-blue in the two others. The optic axes lie in the plane of symmetry, their divergence in air being 110° . The angle between the bissectrix (negative) and certain known planes is also given. The microscope showed that the lazulite

¹ *Mineralogical Magazine*, 1884, vi, No. 27, p. 49.

² Sitzungsber. der niederrhein. Ges. für Natur. und Heilk. December, 1883, p. 274.

was not homogeneous, being traversed by rutile and by other undetermined substances.

MINERALOGICAL NOTES—Professor Bonney¹ publishes an account of a case of the replacement of quartz by fluor spar. The rock in which it occurs is a mixture of red felspar, fluor spar and tourmaline, and has been named "Trowlesworthite"² by Mr. Worth. It is believed that the rock has been formed from granite through the replacement of quartz by fluor spar. This is an unusual substitution.

Professor W. P. Blake³ has found *columbite* associated with cassiterite, albite and mica in several of the coarse granite veins which traverse the mica schists of Pennington county, Dakota. One mass of columbite was two feet long by twenty inches wide, and must have weighed a ton. In the cavities in the columbite he found a beautiful yellow powder in pellets and pill-like balls, consisting of nearly pure hydrous uranium oxide.

Garnet is reported by H. Louis⁴ as occurring in the form of an igneous dyke in the province of Catalonia in the Pyrenees. The dyke varies in thickness from two to five and a half feet and is vertical. It is made of pure garnet free from admixture of other minerals.

The discovery of *herderite* at Stoneham, Maine, described by Mr. W. E. Hidden⁵ about a year ago, and analyzed by J. B. Mackintosh, was of considerable interest. It had previously been found only at Ehrenfriedersdorf, Saxony, where it was very rare. In a recent note⁶ Professor A. Wiesbach gives the results of a comparative chemical examination of the Saxon and Maine herderite, made at his suggestion by Dr. C. Winkler. These investigations showed remarkable discrepancies between the herderite from the two localities and also between the analyses of Mr. Mackintosh and himself. It was therefore desirable to re-examine the mineral, and Dr. F. A. Genth,⁷ of the University of Pennsylvania, undertook a new analysis, with the result of confirming that of Mr. Mackintosh and disproving those of Dr. Winkler. The latter is shown to have employed incorrect methods of analysis, thus losing the fluorine and part of the glucina. Dr. Genth states that "there can be very little doubt that the Ehrenfriedersdorf and Stoneham mineral are identical in composition."

¹ *Mineralog. Magazine*, 1884, VI, p. 48.

² *Trans. Royal Geolog. Soc. of Cornwall*, Vol. x, p. 177.

³ *Amer. Jour. Sc. and Arts*, November, 1884, p. 340.

⁴ *Mineral. Magazine*, July, 1844, p. 46.

⁵ *Amer. Journ. Science*, XXVII, 135.

⁶ *Neues Jahrb. d. Miner.*, 1884, II, 134.

⁷ *Proc. Amer. Philos. Soc.*, Oct. 17, 1884.